## REMARKS/ARGUMENTS

Claims 1-14 in the case are pending, and stand rejected under 35 U.S.C. §103(a), as being unpatentable over Allen et al., '247, '677 or Avakian et al. Claims 7-14 are cancelled herein. New Claims 15-20 are added.

Base Claim 1 has been amended to further distinguish the present invention from the art cited. Specifically, amended Claim 1 states that the polystyrene foam composition has a *density less than 0.3 grams per cubic centimeter.* New base Claim 15 likewise recites a low density polystyrene foam composition, and which further includes a *masterbatch composition* of polytetraflouroethylene particles and polystyrene carrier resin.

With regard to the art cited, Applicant acknowledges that the use of chloro-flouro polymers as nucleating agents for foam is not by itself novel. However, use of such materials as nucleating agents in *polystyrene* is unique. The prior art does not teach or suggest the unexpected benefits of this class of nucleators in polystyrenic foam. Applicant therefore submits that use of chloro-flouro polymers as nucleating agents in styrenic polymers combined with the unexpected improvements in physical properties of the resultant foam is novel, unique, and patentable.

Both Allen and Avakian refer to foam of high specific gravity. The sample data provided in Avakian indicates a specific gravity of 0.90 grams per cubic centimeter. While no specific density data was cited in Allen, it is generally known that exclusive use of chemical blowing agents and foam molding are both indicative of high specific gravity foam materials.

Given a unitless square box, by the formula of volume equals 4/3 times π ("pi") times the radius cubed, the maximum volume that can be contained within a sphere within that volume is 52.4 percent of the volume. If this is considered the void volume of a cell, then the remainder volume would represent polymer occupying 47.6 percent of the unit volume. Adjusting for specific gravity, the minimum density for any foam can be calculated below which the structure of any given cell begins to interfere with others. For polyester, polystyrene, and polypropylene, for example, this specific gravity is 0.64, 0.51, and 0.44 grams per cubic centimeter respectively. Data submitted by Avakian, Allen, and Johnston all exceed this minimum specific gravity. The present claims recite a polystyrene foam composition having a density less than 0.3 grams per cubic centimeter

In the high specific gravity range of foam density, cells do not interfere with each other on any substantial scale, and physical properties can be predicted based solely upon the specific gravity of the foam and the physical of the polymer used. However, in the domain of cell interference, foam properties will depend on additional factors such as orientation of the polymer within the cell walls, the distribution of material in cell walls versus material contained within cell struts, cell size, and density. Clearly, when used in polystyrenic polymers, chloro-flouro nucleators create a synergy unknown in other polymer combinations or with other nucleators in polystyrene. This is evidenced in the example data. For example, micrographs show cells are more consistent in size and more balanced in all dimensions. Sidewall strength is improved even at lower specific gravity. Less brittleness is observed in the foam product. Indeed, other benefits have been documented since Applicant's original filing such as the reduced occurrence of open cells. By this argument, foam properties below the density at which cell interference affects properties cannot be anticipated by prior art nor has any prior art relative to low density foam disclosed the unexpected benefits observed with the use of the disclosed nucleating agent. Therefore, Applicant insists that improvements in properties cannot be anticipated for foam density below 0.3 grams per cubic centimeter and inclusion of this limitation overcomes prior art rejection.

For all these reasons discussed above, Applicant respectfully submits that the present low density polystyrene foam composition is both novel and patentable over the prior art of record. All claims are now believed to be in condition for allowance. Such action is therefore respectfully requested at an early date. If the Examiner believes that issues remain for discussion, he is invited to contact the undersigned at the telephone number indicated below.

Respectfully submitted,

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